

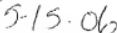
PATENT

3151-01

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Nanoy S. Dedeck



5-15-06

Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

CUSTOMER NO. 26645

In re Application of: Mitchell M. Jackson et al.

Serial No: 10/511,003

Examiner: Matthew Thexton

Filed: October 12, 2004

Art Unit: 1714

For: Method of Operating Internal Combustion Engine by Introducing
Antioxidant into Combustion Chamber

Commissioner for Patents
U.S. Patent and Trademark Office
Alexandria, Virginia

RESPONSE TO NON-COMPLIANT AMENDMENT

Dear Sir:

In response to the Examiners' Notice of Non-Compliant Amendment dated April 17, 2006, Applicants have correctly amended claim 12 in compliance with 37 CFR 1.121.

The correctly amended claim 12 is included in the list of claims as amended in Applicants' Amendment and Response dated February 21, 2006 as follows.

CLAIM AMENDMENTS

3151-01

What is claimed is:

1. *(Currently Amended)* A method of operating an internal combustion engine, comprising:
introducing an antioxidant composition comprising
supplying to said engine a fuel containing an antioxidant selected from the group consisting of:
 - (A) a sterically hindered phenol;
 - (B) an alkylene or alkylidene coupled sterically hindered phenol oligomer;
 - (C) a secondary aromatic amine;
 - (D) a reaction product of a hydrocarbyl-substituted hydroxy-containing aromatic compound, an aldehyde, and a carboxyl-substituted phenol; or and
 - (E) a mixture thereof into a combustion chamber of the engine during the operation of the engine
wherein the antioxidant composition is essentially free of sulfur and phosphorus.
2. *(Canceled)*
3. *(Original)* The method of claim 1 wherein the antioxidant composition is introduced into the combustion chamber by injection from a dosing system or as a component of a fuel composition.
4. *(Original)* The method of claim 3 wherein the antioxidant composition is present in the fuel composition at 0.1 to 40,000 ppm by weight.

5. *(Original)* The method of claim 1 wherein the antioxidant composition (A) is a phenol having two or more alkyl substituents that contain 1 to 24 carbon atoms and that occupy the 2-position and 6-position of the phenolic ring.

6. *(Original)* The method of claim 1 wherein the antioxidant composition (B) is a methylene coupled phenol oligomer containing two or more phenolic rings wherein each phenolic ring is occupied at the 2-, 4- and 6-positions by an alkyl or arylalkyl group.

7. *(Original)* The method of claim 1 wherein the antioxidant composition (C) is a diarylamine containing one or more alkyl substituents wherein each substituent contains up to 16 carbon atoms.

8. *(Original)* The method of claim 1 wherein the antioxidant composition (D) is the reaction product of an alkylphenol, formaldehyde, and salicylic acid.

9. *(Original)* The method of claim 1 wherein the antioxidant further comprises one or more fuel additives.

10. *(Original)* A method of improving the performance of a lubricating oil of an internal combustion engine by operating the engine according to the method of claim 1.

11. *(Original)* The method of claim 10 wherein the engine is a compression-ignited engine or spark-ignited direct injection engine having an exhaust gas recirculation system.

12. *(Currently Amended)* The method of claim 10 wherein the engine is a compression-ignited or spark-ignited engine having an exhaust treatment device, device, and the lubricating oil has at least one of the properties selected

from the group consisting of a phosphorus content below 0.1% by weight, a sulfur content below 0.5% by weight, and a sulfated ash content below 1.5% by weight.

13. *(Original)* The method of claim 10 wherein the engine is installed on a motor vehicle and has a recommended drain interval for the lubricating oil of the engine of greater than 6,000 miles.

14. *(Original)* The method of claim 10 wherein the engine is a stationary engine having a recommended drain interval for the lubricating oil of the engine of greater than 150 operational hours.

15. *(Original)* The method of claim 10 wherein the engine is a compression-ignited or spark-ignited engine having an exhaust treatment device, and a fuel of a fuel composition used to fuel the engine has a sulfur content below 80 ppm by weight.

REMARKS

In response to the Office Action of April 17, 2006, Applicants hereby request the Examiner to reconsider the claims in view of the following remarks.

Applicants believe the amendment to claim 12 meets the requirements of 37 CFR 1.121 and is now compliant. Accordingly, Applicants request this amendment to be accepted and examination to continue on the application.

Should the Examiner have any questions regarding these amendments or the remarks made herein, a telephone call to the undersigned attorney at 440-347-5913 would be welcome.

If any fees are due with the filing of this document, the Commissioner is authorized to charge those fees to The Lubrizol Corporation Deposit Account No. 12-2275.

Respectfully submitted,
THE LUBRIZOL CORPORATION



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